REMARKS

Claims 1 and 3-10

Claim 1 is an independent claim, from which claims 3-10 ultimately depend. Claims 1, 4 and 6 have been rejected under 35 USC 103(a) as being unpatentable over Tzu (6,007,324) in view of Tashiro (2004/0257506). Claims 3 and 5 have been rejected under 35 USC 103(a) as being unpatentable over Tzu in view of Tashiro, and further in view of Cauchi (2004/0101790). Claims 7-10 have been rejected under 35 USC 103(a) as being unpatentable over Tzu, Tashiro, Okoroanyanwu (6,589,713), and Cauchi.

Applicant submits that claim 1 is patentable over Tzu in view of Tashiro, such that all the claims 1 and 3-10 are patentable. Applicant provides two separate and independent reasons why claim 1 is patentable over Tzu in view of Tashiro. First, the Examiner has not provided a reason that prompts one of ordinary within the art to modify Tzu in view of Tashiro to yield the invention. Second, Tzu teaches away from modification per Tashiro as suggested by the Examiner. Each of these reasons is now discussed in detail.

1) No reason has been provided to modify Tzu in view of Tashiro to yield the invention

Applicant first submits that the Examiner has not provided any reason that would prompt one of ordinary skill within the art to modify Tzu in view of Tashiro to yield the invention. The Supreme Court in the recent Supreme Court decision, KSR Int'l Co. v. Teleflex, Inc., 550 US _____ (2007) noted that the Examiner must "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." (Id., at 15) That is, "[t]he mere fact that references ***CAN*** be combined or modified does not render the resultant combination obvious." (MPEP sec. 2143.01.III, citing In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990))

Now, the Examiner has found all limitations of claim 1 in Tzu, except that Tzu fails to disclose the claim limitation of claim 1 of "forming the depression at the surface of the layer in the first or second portion of the layer" by baking the layer. (Office action of July 20, 2007, p. 4, para. 2) Rather, the Examiner has stated that Tashiro discloses forming such a depression in paragraph [0206] thereof. (Id.) The Examiner then stated that it "would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have used the baking step to form the depression in the surface of the layer, as suggested by Tashiro, in the process of Tzu ('324) *because Tashiro teaches that a baking step, rather than a development step, **CAN** be used to form depression in areas of a photosensitive layer that have been exposed to radiation, in order to produce a desired pattern*." (Id.)

In the present situation, the Examiner has thus indicated that the process of Tzu ***CAN*** be modified to include the baking step of Tashiro in lieu of the development step taught by Tzu itself. However, the fact that Tzu ***CAN*** be modified in view of Tashiro is not "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," to quote the Supreme Court. As such, "[t]he mere fact that [Tzu and Tashiro] ***CAN*** be combined or modified does not render the resultant combination obvious," to quote the Federal Circuit. Therefore, the present invention has not been shown to be *prima facie* obvious over Tzu in view of Tashiro.

2) Tzu teaches away from modification in view of Tashiro

Applicant next submits that Tzu teaches away from being modified per Tashiro as suggested by the Examiner. In its recent KSR decision, the Supreme Court also stated that it "relie[s] upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." (KSR, at p. 12; see also In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)) One type of teaching away is of course that "[t]he proposed modification

cannot render the prior art unsatisfactory for its intended purpose." (In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), cited in MPEP sec. 2143.01.V.)

Tzu is directed to a "double layer method for fabricating a rim type attenuating phase shifting mask." (Title) Tzu more specifically states the following:

> This invention describes methods of forming *rim type attenuating phase shifting masks* using a single resist layer and a single developing solution.
>
> . . . .
>
> . . . . Rim type attenuating phase shifting masks are used to overcome the problems of the side lobe effect and retain the advantages of attenuating phase shifting masks. In rim type attenuating phase shifting masks a mask pattern is defined using attenuating phase shifting material. A second pattern of opaque material is then formed over the attenuating phase shifting material leaving *a gap width* of attenuating phase shifting material which is not covered by the opaque material. The attenuating phase shifting material defines the pattern and the opaque material *prevents the problems of side lobe effect from occurring*.
>
> . . . .
>
> *It is a principle objective of this invention to provide a method for forming rim type masks* . . . .
>
> . . . .
>
> A first pattern is formed in a layer of attenuating phase shifting material 12 . . . . A second pattern is formed in a layer of opaque material 14 . . . . The second pattern in the opaque material 14 forms a rim at the pattern edge of the first pattern leaving a gap width 16 of attenuating phase shifting material 12 exposed. *Gap widths of between about 0.1 and 0.4 micrometers have been shown to eliminate the side lobe problem* with a gap width of about 0.4 micrometer giving the best image resolution for a 0.35 micrometer contact hole using an i-line stepper.

(Col. 2, ll. 10-62; col. 3, ll. 31-45.)

Thus, it is abundantly fair to say that the purpose of Tzu is to fabricate a rim type attenuating phase shifting mask. Such a mask works by defining a rim within the layer 14 around the via within the layer 12, as depicted in FIG. 2 of Tzu. The critical feature in Tzu is the gap 16 between the rim and the via in FIG. 2. In particular, as noted above, where the width of this gap is between 0.1 and 0.4 micrometers, side lobe effect problems are eliminated. In FIGs. 3-14, Tzu depicts a process for fabricating such a rim type attenuating phase shifting mask, including

exposing the photoresist 18 to two different dosages over two different portions 20 and 22 of the photoresist 18 in FIG. 4, and thereafter developing the photoresist 18 so that, as depicted in FIG. 5, there is a pattern within the photoresist 18 that corresponds to the rim type attenuating phase shifting mask. Although not called out in FIG. 5 of Tzu, the gap 16 is clearly depicted in FIG. 5 within the photoresist 18 itself (i.e., the gap 16 being the portion 22 that is not overlapped by the portion 20).

Now, the Examiner would modify Tzu in view of Tashiro to bake the photoresist 18 after FIG. 4 of Tzu, instead of developing the photoresist 18 as in FIG. 5 of Tzu. However, modifying Tzu in view of Tashiro as suggested by the Examiner would mean that the resulting combination could no longer be used to fabricate a rim type attenuating phase shifting mask. Instead of having a clearly defined, sharp-edged pattern within the photoresist 18 where there is a gap 16, as in FIG. 5 of Tzu, instead the resulting combination would have a depression due to the baking of Tashiro. The critical feature of Tzu – the gap 16 – would "melt" or "soften" (i.e., become "depressed") along with the rest of the photoresist 18 exposed to the radiation, making the gap 16 much less clearly defined, if at all. It would become very difficult at best to control the width of the gap 16, which is the critical measurement needed to prevent side lobe problems. The depression within the photoresist 18 that results from modifying Tzu in view of Tashiro is unlikely to be able to be used to fabricate a rim type attenuating phase shifting mask, which is the sole purpose of Tzu in the first place.

In this way, modifying Tzu in view of Tashiro is a "proposed modification [that] render[s] the prior art unsatisfactory for its intended purpose," in contradistinction to the Federal Circuit's instructions. Thus, "when the prior art [so] teaches away from combining certain known elements," the invention in question "is more likely to be nonobvious," to quote the Supreme Court. Therefore, the claimed invention is not *prima facie* obvious over Tzu in view of Tashiro for this reason.

Claims 11-30

Claim 11 is an independent claim, from which claims 12-30 ultimately depend. Claims 11-12, 16, 21-24, and 29 have been rejected under 35 USC 103(a) as being unpatentable over Tzu in view of Tashiro. Claims 13-15 have been rejected under 35 USC 103(a) as being unpatentable over Tzu in view of Tashiro, and further in view of Okoroanyanwu. Claims 25-28 have been rejected under 35 USC 103(a) as being unpatentable over Tzu in view of Tashiro, and further in view of Cauchi. Claims 17-20 have been rejected under 35 USC 103(a) as being unpatentable over Tzu, Tashiro, Okoroanyanwu, and Cauchi.

Claim 11 is patentable over Tzu in view of Tashiro, for the same reasons that claim 1 is patentable over Tzu in view of Tashiro. In particular, the Examiner has not provided a reason that prompts one of ordinary skill within the art to modify Tzu in view of Tashiro to yield the claimed invention, and Tzu teaches away from modification in view of Tashiro. Claims 12-30 are patentable at least because they depend from a patentable base independent claim.

Claims 31-52

Claim 31 is an independent claim, from which claims 32-52 ultimately depend. Claims 31-36, 41-48, and 52 have been rejected under 35 USC 103(a) as being unpatentable over Tzu in view of Tashiro, Okoroanyanwu, and Cauchi, and further in view of Makigaki (6,863,375). Claims 37-40 and 49-51 have been rejected under 35 USC 103(a) as being unpatentable over Cauchi I, Tashiro, Tzu, Okoroanyanwu, and/or Cauchi.

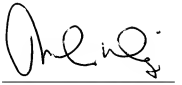
Claim 31 is patentable over Tzu in view of Tashiro, Okoroanyanwu, and Cauchi, and further in view of Makigaki, for the same reasons that claim 1 is patentable over Tzu in view of Tashiro. In particular, because the Examiner has not provided a reason that prompts one of ordinary skill within the art to modify Tzu in view of Tashiro, claim 31 cannot be unpatentable over Tzu in view of Tashiro (and also in view of Okoroanyanwu and Cauchi and further in view of Makigaki). Likewise, because Tzu teaches away from modification in view of Tashiro, claim

31 cannot be unpatentable over Tzu in view of Tashiro (and also in view of Okoroanyanwu and Cauchi and further in view of Makigaki). Claims 32-52 are patentable at least because they depend from a patentable base independent claim.

Conclusion

Applicants have made a diligent effort to place the pending claims in condition for allowance, and request that they so be allowed. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Mike Dryja, Applicant's representative, at 425-427-5094, so that such issues may be resolved as expeditiously as possible. For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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